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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,482	02/04/2000	Masahiro Suzuki	103689.01	7544

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EXAMINER	
HENN, TIMOTHY J	

ART UNIT	PAPER NUMBER
2612	9

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/497,482	SUZUKI ET AL.	
	Examiner	Art Unit	
	Timothy J Henn	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *17-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 February 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/342,512.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in Paper No. 8 is acknowledged. The traversal is on the ground(s) that "the search and examination of the entire application could be made without serious burden". This is not found persuasive because the search groups for the respective groups are not completely overlapping, for example the search for Group I does not require a search for white balance fine adjustment coefficients which is necessary for Group II, and further does not require a search for multiple operation modes which is necessary for Group III.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 17-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 8.

Drawings

3. The drawings are objected to because Figures 19, 20 and 21 are not labeled in the English language. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Maeda (US 5,343,243).

[claim 1]

6. In regard to claim 1, note that Maeda discloses a digital camera (Figure 1) comprising an image-capturing device (Figure 1, Item 3) that captures a subject image having passed through a taking lens (Figure 1, Item 2) and outputs the image data (Column 3, Lines 60-67), a recording processing circuit (Figure 1, Item 8) that performs recording processing on image data (Column 4, Lines 6-13) and an image processing circuit (Figure 1, Items 4 and 5) that first performs pre-treatment on image data corresponding to N lines X M rows output by the image-capturing device in units of individual lines in line sequence (Column 3, Line 61 – Column 4, Line 5) and then performs format processing appropriate for recording performed at the recording processing circuit (Figure 1, Item 8) on the image data having undergone the pre-treatment in units of blocks each ranging over n lines X m rows (N>n, M>m) in block sequence (Figure 13; Column 4, Lines 1-13; Column 8, Line 27 – Column 9, Line 8).

[claim 2]

7. In regard to claim 2, note that the recording processing circuit (Figure 1, Item 8) is a compression circuit that compresses the image data (Column 4, Lines 9-12).

8. Claims 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tagami et al. (US 5,402,171).

[claim 7]

9. In regard to claim 7, note that Tagami et al. discloses an image capturing device (Figure 78) that captures a subject image having passed through a taking lens and outputs the image data (Column 29, Lines 55-66), a recording processing circuit (Figure 78, Item 205, 206) that performs recording processing on image data (Column 30, Lines 6-14) and an image processing circuit (Figure 78, Item 204) that, with image data output by the image-capturing device input as data corresponding to n lines X m rows (i.e. the dimensions of the image capturing device), calculates a color difference signal based upon the image data thus input (Column 12, Lines 57-62), performs interpolation processing and low pass filtering processing simultaneously on the color difference signal using filter coefficients for interpolation/low pass filtering (Column 30, Lines 3-50) and then performs matrix processing (such as JPEG compression) appropriate for recording performed at the recording processing circuit to generate a formatted signal (Column 30, Lines 6-14).

[claim 8]

10. In regard to claim 8, note that the recording processing circuit is constituted of a compression circuit (Figure 78, Item 205) that compresses the image data.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (US 5,343,243).

[claims 4 and 5]

13. In regard to claims 4 and 5, note that these claims contain all limitations of claims 1 and 2 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claims 1 and 2. However, it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading (Official Notice). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claims 1 and 2 as claimed in claims 4 and 5.

14. Claims 3, 6 and 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (US 5,343,243) in view of Freeman (US 4,774,565).

[claim 3]

15. In regard to claim 3, note that Maeda discloses all limitations except a pre-treatment which includes gamma correction and white balance correction and format processing which includes interpolation processing, LPF and BPF filter processing and color difference signal calculation processing.

16. Freeman discloses an apparatus which uses filtering (Figure 1, Items 28-36; The office notes that Freeman uses only low-pass filtering, however low-pass filtering is just a subset of band-pass filtering (i.e. passing all signals from 0 to a threshold)), color difference signal calculation (Figure 1, Items 24 and 26) and interpolation (Figure 1, Item 40) to reconstruct missing color samples for pixels without introduction excessive color fringes (Column 1, Line 58 – Column 2, Line 25). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the system of Freeman for producing complete color signals for each pixel without introduction color fringes. It can further be seen that Maeda in view of Freeman lacks pre-treatment which includes gamma and white balance correction. However, it is well known in the art to process image signals for gamma and white balance correction in order to improve the overall quality of the resulting image (Official Notice). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to include gamma and white balance correction in the system of Maeda in view of Freeman in order to improve the overall quality of the resulting images.

[claim 6]

17. In regard to claim 6, note that these claims contain all limitations of claim 3 with the inclusion of a storage medium having a program stored therein to store a method

which performs the steps taken by the apparatus in claim 3. However, it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading (Official Notice). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claim 3 as claimed in claim 6.

[claim 11]

18. In regard to claim 11, note that Maeda discloses a digital camera (Figure 1) comprising an image-capturing device (Figure 1, Item 3) that captures a subject image having passed through a taking lens (Figure 1, Item 2) and outputs the image data (Column 3, Lines 60-67), an image processing circuit (Figure 1, Items 7) that performs image processing including data format processing appropriate for data compression on the image data output by the image-capturing device (Column 3, Line 61 – Column 4, Line 13), a compression circuit (Figure 1, Item 8) that compresses the image data output by the image processing circuit (Column 4, Lines 9-12), wherein the image processing circuit engages in processing on image data corresponding to an n X m pixel area during the format processing (Column 4, Lines 1-13). Therefore, it can be seen that Maeda lacks an image processing circuit which engages in median processing on the n X m pixel area block.

19. Freeman discloses an apparatus which uses median filters (Figure 1, Items 32 and 34) to reduce the color fringe artifacts which occur during interpolation when filling in missing color components from image data read out from an image array, such as the

format processing in Maeda (Column 1, Line 58 – Column 2, Line 25). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement median filters as taught by Freeman to reduce the occurrence of color fringe artifacts during format processing.

[claim 12]

20. In regard to claim 12, note that the median processing of Freeman is performed on (n-i) X (m-j) sets of image data extracted from the image data corresponding to the n X m pixel area (Column 4, Lines 20-41; Column 5, Lines 43-51; The office notes that Maeda teaches the use of 8x8 or larger blocks for use in a DCT transform and Freeman discloses the use of a 1x7 area of data (Column 5, Lines 43-51) from which median information is selected, therefore it can clearly be seen that this fulfills the (n-i) X (m-j) block requirement of claim 12).

[claim 13]

21. In regard to claim 13, note that Maeda discloses a digital camera (Figure 1) comprising an image-capturing device (Figure 1, Item 3) that captures a subject image having passed through a taking lens (Figure 1, Item 2) and outputs the image data (Column 3, Lines 60-67), an image processing circuit (Figure 1, Items 7) that executes image processing on sets of image data corresponding to n X m pixel area blocks output by the image-capturing device (Column 4, Lines 1-13). Therefore, it can be seen that Maeda lacks and image processing circuit that executes median processing on a (n-i) X (m-j) set of image data extracted from image data corresponding to an n X m pixel area block.

22. Freeman discloses an apparatus which uses median filters (Figure 1, Items 32 and 34) to reduce the color fringe artifacts which occur during interpolation when filling in missing color components from image data read out from an image array, such as the format processing in Maeda (Column 1, Line 58 – Column 2, Line 25). Freeman further teaches that data from a 1x7 block is used for obtaining the media information (Column 5, Lines 43-51; The office notes that Maeda teaches the use of 8x8 or larger blocks for use in a DCT transform and Freeman discloses the use of a 1x7 area of data from which median information is selected, therefore it can clearly be seen that this fulfills the (n-i) X (m-j) block requirement of claim 13). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement median filters as taught by Freeman to reduce the occurrence of color fringe artifacts during format processing.

[claims 14-16]

23. In regard to claims 14-16, note that these claims contain all limitations of claims 11-13 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claims 11-13. However, it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading (Official Notice). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claims 11-13 as claimed in claims 14-16.

24. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tagami et al. (US 5,402,171).

[claims 9 and 10]

25. In regard to claims 9 and 10, note that these claims contain all limitations of claims 7 and 8 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claims 7 and 8. However, it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading (Official Notice). Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claims 7 and 8 as claimed in claims 9 and 10.

Conclusion

26. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art further shows the current state of the art in image processing systems and methods implement in cameras.

i. Watanabe et al. US 5,920,343

ii. Johnson et al. US 2002/0176009 A1

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J Henn whose telephone number is (703) 305-

8327. The examiner can normally be reached on M-F 7:30 AM - 5:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
3/15/2004

NGOC-YEN VU
PRIMARY EXAMINER